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Researching Students' Interaction in Collaborative Learning Class

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Abstract

Interaction as a part of students' collaboration is an important aspect that needs to be considered in the teaching and learning process. An active interaction among students stimulates collaboration in their prior knowledge, perspectives and background experiences which later promote their high- level learning. It also affects the development of students' learning process in the classroom. Nowadays, studies on interaction elaborate and become something challenging. Many theories have been developed by researchers, and each has its own strengths and weaknesses based on its needs and goals. In this study, the writer presents a library study of the types of students' interaction and also a theory on researching students' interaction developed by Kumpulainen and Wray. They have proposed three analytical dimensions of interaction namely: 1. the functions of verbal interaction which focuses on students' verbal language, the character, and purpose of students utterances in peer group interaction, 2. cognitive processing that examined the ways in which students approached and processed learning tasks in their social interaction, 3. social processing which examines the nature of the social relationships that were developed during students' social activity. These elements are related and connected each other. However, a different kind of analysis is needed in order to analyze the elements through their analytic purposes.

Keywords: Students' interaction, researching students' interaction, Collaborative learning class.

INTRODUCTION

Nowadays, interaction in a classroom between students-students or students-teacher become something challenging to be investigated. People can learn the effectiveness of the learning process through the pattern of the classroom interaction since it influences teacher and students or among students who involved in the communication transfer (Dagarin, 2004). For decades, researcher and professional experiences have shown that interaction in a classroom gives a significant impact toward foreign language learning. Those studies present important details on many perspectives of interaction. Vygotsky (1978) through his social cultural theory believes that learning is an important process which can only be operated when there is an

interaction between student and people around him including teacher and his peers. When these processes are internalized by students, they will become students with an independent developmental achievement for the language learning. In other hand, Thapa&lin as cited in Rukmini&Jiwandono (2015) believe that classroom interaction can help students in building their confidence, developing their communication skill, strengthening their social relationship, and also increasing students' language store. Based on this information, it can be inferred that classroom interaction gives positive impact not only for students language development but also on their social relationship as well.

Kind of Classroom Interaction

Some research studies have been done in order to find the types of students' interaction. One of the studies is conducted by Angelo (1993) who divides classroom interaction into two kinds: 1) student- teacher interaction, 2) student- student interaction. Through these kinds of interaction, the student can maximize their learning by actively participating in the interaction process. These two types of interaction also give different opportunities for student's learning therefore it is important for educators to put attention on both of them. *Student-teacher interaction* is a kind of interaction where teacher and student are actively involved in learning activities. This kind of interaction is aimed to enhance students understanding of the material and meaning through teacher's questioning, student's answering the questions and teacher's feedback. Moreover, this process is also intended to help students getting a clear interpretation of the course they have learned. In a traditional classroom setting where student- teacher interaction occurs through face-to-face interaction, the teacher acts more as the center of learning. On the other hand, a more modern learning such as a kind of learning where the web-based pedagogical format is used, the teacher usually puts his role as a facilitator rather than a lecturer. There are some variables considered as a part of student- teacher interaction: 1) interaction pattern 2) teacher questioning 3) types of question 4)wait time. Nevertheless, *student- student's interaction* occurs between students in a peer discussion or in a small group discussion. In this kind of interaction, student becomes a main participant in whom the learning process takes place. The teacher plays a role as a facilitator who monitors the process of learning.

Another research is from Mingzhi (2005) who states that classroom interaction comprising seven types; 1. Teacher speaking to the whole class,2. Teacher speaking to individual class,3. Teacher speaking to a group of members,4. Student speaking to

teacher, 5. student speaking to student, 6. Student speaking to group members, 7. Students speaking to the whole class. Each type of interaction is classified based on the person who controls the interaction and also gives information in the classroom. The person can be a teacher, a student or a group of students. As an example, the first type *Teacher speaking to the whole class* is defined as an interaction type which occurs when the teacher is the only person who controlled the class. She becomes the only person who gives students information and materials. Another type is *teacher speaking to individual class* which means that the other members of the class participate only as a hearer. When in the same occasion the teacher participates and also gives suggestion or advice in students' group work it then belongs to the third type *Teacher speaking to a group of members*.

Students' Interaction in Collaborative Learning Group

Nowadays, students' interaction as a part of collaborative learning becomes an important aspect that needs to be considered in the teaching and learning process. Many studies have found that this collaboration is effective in enhancing students learning. Interaction between students' different background experiences, prior knowledge and perspectives develops their literate thinking and promotes their high-level comprehension (Anderson, T& Soden, R, 2001). Students who are engaged in a meaningful discussion also tend to demonstrate better text comprehension. Moreover, involving in a meaningful discussion helps them to achieve a new understanding which also leads to a better text comprehension.

There were several background theories which supported the implementation of students' collaboration; 1. the theory of cooperative/ collaborative learning., 2. theory of constructivism., 3. the theory of zone of Proximal Development (ZPD). These theories have put their attention on the crucial role of social interaction in the language learning. Cooperative learning is one of the theories which is appreciated for its effectiveness on teaching and learning process (Lee, 2014). In cooperative learning, students are grouped together so that they can learn and interact for creating a more comprehensive learning. Whereas in constructivism theory, learning is believed as an active construction of meaning rather than passive percipience (Piaget, 1983). Learners need to be active in order to construct a new knowledge. In the other hand, Zone of Proximal Development as a teaching theory believed learning as “ the distance between a learner's actual development level of problem-solving and the level of potential development through problem-solving under guidance or in collaboration with more able

peers”(Vygotsky,1978).He argues that to enhance learners competence, an active interaction and guidance from teacher or more capable peers are needed.

Researchers have conducted much empirical research on students’ interaction in collaborative group. They have focused their study on several areas such as the benefits, the challenge, types of conflict, the nature of the group talk and soon. In his study, Osborn et.al (2010) investigate about students’ oral interaction on group discussion. They found that argumentation and collaborative work are important in learning. Through a cognitive process of comparison and contrast in discussion, individual can develop a new understanding. They believe that learning to argue can be seen as a core process both in learning to think and also learning to construct new understanding. Students who were engaged in group discussion through argumentation significantly outperform control group in conceptual learning.

In another study, Olsson & mattiasson (2013) supported the idea on the importance of argumentation in collaborative work for learning. They have investigated about the interaction dimension of collaborative work by exploring how the students use explanation and argument when they engaged in a peer discussion. The result shows that there are three kinds of discussion were identified; narrow discussion, confirming discussion and also contradictory discussion. Yu, R(2008) categorized interaction based on the co-construction of learner’s self and cognitive development which involves collaborative dialogue, negotiation, and co-construction.

Based on those research, it has been known that interaction as a part of students’ collaborative work in the classroom affects students’ learning. Through an active interaction in a collaborative learning group, students can build a new understanding on some aspects. Furthermore, It also helps students in building a new perspective during the process of learning.

Kumpulainen and Wray’s Analytic Dimensions on students’ Interaction

Interaction among students in classroom whether in a pair or in a group learning is an interesting process to be investigated since it provides information about what is happening in the classroom. This process also naturally shows students’ ways of thinking and also their interest in the learning process. Some methods have been built by researchers in order to investigate students’ active interaction in the process of learning. In the early beginning of studies, students’ interaction is examined only on their verbal interaction. However, it found that researching only verbal interaction was not enough. Students’ interaction in the process of learning is a very complex and rich

process, investigating verbal interaction will only show some part of it. Kumpulainen & Wrey (2015) on their research explain the importance as: Firstly, an interaction needs to be learned with a complete system thus it is crucial to develop a descriptive system of analysis. Secondly, it is really important to study the situated processes of meaning-making and knowledge construction within peer groups. The Researcher also needs to pay more attention to the moment-by-moment nature of interaction in order to highlight the interaction process. Thirdly, it seemed important to take the individual and the group as units of analysis in order to investigate the types and forms of participation within peer groups.

In order to fulfill those needs, they propose a new method which can help researcher to explain the dynamic of students' interaction in a collaborative learning group. This method investigates the nature of students' social activity, the functions of students' verbal interaction in teacher-centered and peer-group centered classroom and also on their cognitive processing in learning. With its clear categorizations and descriptions, this method is considered useful in giving a brief and structured overview of the nature and quality of students' verbal interaction in a learning context.

Specifically, the method proposed by Kumpulainen & Wray is focused on three analytic dimensions of Interaction: 1. the functions of verbal interaction which focuses on students' verbal language, the character and purpose of students utterances in peer group interaction, 2. cognitive processing that examined the ways in which students approached and processed learning tasks in their social interaction, 3. social processing which examines the nature of the social relationships that were developed during students' social activity. These elements are considered to be related and connected each other, however, a different kind of analysis is needed in order to analyze them through their analytic purposes.

Functional analysis of verbal interaction

The functional analysis of students' verbal interaction concentrates on finding out the purpose of verbal language used by students in certain context. It also examines the communicative strategies applied by individual students whilst taking part in interaction and on the functional meaning of an utterance as a part of its illocutionary force (Halliday & Hasan, 1989; Edwards & Westgate, 1994). Moreover, the function of the language used by students can also be linked to many purposes including their intra- and interpersonal meaning such as the topic of discussion, individual expectation, and also the situation in which the students are involved. On the other hands, the verbal

language used by students is the representation of its ideational and cognitive function of language. It also delivers the interpersonal function related to the personal and social relationships between the interactors.

The identification of language functions on students' interaction takes place on the basis of implication, that is, what a speaker can imply, suggest or mean may be different to what the speaker literally says. Consequently, the functions are not identified on the basis of specific linguistic forms. Rather, they are identified in the context in terms of their retrospective and prospective effects on the actual discourse both in terms of content and form. An understanding of the functions for which students use their verbal language in interaction is greatly assisted by data gathered from direct observation, video recording, and student interviews. The functions of peer interaction are the minimum units analyzed in the system. They are identified on an utterance basis and defined in terms of source, purpose and situated conversational meaning. An utterance is viewed as a meaningful unit of speech, that is, a message unit. The boundary between each utterance is linguistically marked by contextual cues. Given that an utterance may serve multiple functions, more than one function can be recorded for each utterance. Examples of language functions identified in peer group interaction across learning situations are the *Informative, Expository, Reasoning, Evaluative, Interrogative, Responsive, Organisational, Judgmental (agrees/disagrees), Argumentation, Compositional, Revision, Dictation, Reading aloud, Repetition, Experiential, and Affective* functions (Kumpulainen&Wray,2002)

Analysis of cognitive processing

The analysis of cognitive processing examines the ways in which students approach and process learning tasks in their social activity (Kumpulainen&Wray,2002). It emphasizes the students' working strategies and situated positions towards knowledge, learning and themselves as problem solvers. Here, cognitive processes are seen as dynamic and contextual in nature, being socially constructed in students' evolving interactions in the sociocultural context of the activity.

In the analytical framework, there are three broad modes that have been used to study the nature of students' cognitive processing in group activity:

- *Procedural processing*, it refers to the routine execution of tasks without thorough planning or thinking. Ideas are not developed, rather they are cumulated or disputed

without constructive judgments or criticism. The students' activity is often product-oriented and concentrates on the procedural handling of information.

- *Interpretative or exploratory processing*, It is a situation in which thinking is made visible through language or other tools and the whole activity is focused on strategies, planning, and hypothesis testing. The students' activity reflects their deep engagement and interest in the problem-solving task.
- *Off-task activity*, it applies to a situation during which the students' activity does not focus on the task, e.g. playing around, discussing break time activities, "absent minded" activity.

(Kumpulainen & Wray,2002)

It is important to recognize that these three broad analytical modes are used as heuristic devices rather than distinct categories into which students' cognitive processing can be easily coded. Rather, the modes are reflected in different ways in different contexts and situations and, hence, require situational definitions.

Analysis of social processing

The analysis of social processing aims to characterize the social relationships and types of participation in groups (Kumpulainen&Wray,2002). The different modes in which social processing is often constructed in peer group interaction are *collaborative*, *tutoring*, *argumentative*, *individualistic*, *dominative*, *conflict*, and *confusion* modes. The *confusion modes* appear during which there is an obvious misunderstanding or lack of shared understanding between the children. They do not have any idea about what others expected from the conversation thus more comprehensive discussion is needed. In *The conflict mode* students finds disagreement, mostly at a social level. There is also a tension between students where each student has his own idea and can not be compromised. Another mode is *The dominative mode* which reflects the distribution of power and status in the peer group which contrasts to collaborative interaction. There is a student who dominates the group and plays a central role. A condition where imbalance in students' social status and power do exist . *The individualistic mode* in the other hand implies that students are not developing their ideas together but rather working individually in the group. Students tend to work alone and do not share their idea. *The argumentative and tutoring modes* are modes that best characterize the nature of collaboration between the participants.Indeed, they are recognized as the sub-modes of collaborative activity. *The argumentative mode* implies constructive interaction in which students negotiate their differing understandings in a

rational way by giving judgments and justifications. This often leads to a shared understanding of the situation. *The tutoring mode* shows students helping and explaining for the purpose of assisting another to understand the matter at hand. In addition, collaboration includes interaction in which participants attempt to achieve a mutual understanding of the situation, ideas are jointly negotiated, and discourse is coherent.

However, it must also be noted by researcher that except the functional analysis of peer group interaction, cognitive and social processing as the unit of analysis for the different modes is defined on moment-by-moment instead of distinct rules. Furthermore, the units of analysis for the modes of cognitive and social processing are based on their development in peer interaction or based on the interactors' interpretations of the situation. Finally, it can be concluded that the three dimensions of analytical framework from the data is the result of the researchers' and the interactors' analysis.

Studies on students' interaction in Collaborative learning Class

As students' interaction becomes an aspect that determines the success of learning activity, many studies are conducted to explore the activities involved. One of the studies was from Jacobs, Gm & Ward, C (2000) through their article entitled "Analysing Student-student interaction through Cooperative Learning and Systemic Functional Linguistics Perspectives". In this article, they used several dimensions of cooperative learning as the tool for studying students-student interaction namely: positive interdependence, individual accountability, collaborative skills, equal participation, simultaneous interaction. Indeed, they also study this process by using systemic functional linguistics including ideational, interpersonal, and textual meaning. As the final point, the researcher concludes that interaction among students serves skills and attitudes they need in learning. Moreover, it also teaches them on how to maintain their patience and persistence in the process of learning in collaborative learning class.

Another research was from Kumpulainen,K & Kaartinen,S (2000). This research focuses on the situational mechanism of peer group interaction in collaborative activity especially on the process and condition of learning. Moreover, it also emphasizes on the complexity of tween social and cognitive processes of interaction in collaborative learning class. The result showed that both cognitive and social processes in interaction affect the success of the collaboration. Their elements such as; the task that has been

used, students' effort on meaning-making, and the opportunity to use different semiotic tools are also crucial in supporting the process of learning.

CONCLUSION

As researching students interaction is something challenging, many theories are built in order to investigate its process during the collaborative learning. Amongst those theories, one proposed by Kumpulainen & Wray has been seen as something beneficial since it offers a systematic and a complete tool for the analysis. This theory uses three analytical dimensions of interaction for the investigation namely: 1. The functions of verbal interaction, 2. Cognitive processing and, 3. Social processing. The first dimension concerns on students' verbal language. It examines students' utterances in order to explore its character and purposes. In this case, an utterance is viewed as a meaningful unit of speech which is separated by its contextual cues. On the other hand, cognitive processing as the second element has examined the ways in which students approached and processed learning tasks in their social interaction. It also highlighted students' working strategies and situated positions towards knowledge where cognitive processes are seen as dynamic and contextual in nature, being socially constructed in students' evolving interactions in the sociocultural context of the activity. Indeed, social processing as the third element explores the nature of the social relationships that were developed during students' social activity and participation. Finally, it can be concluded that these three analytical dimensions of interaction are beneficial as the tools for researching students' interaction. Moreover, a deep analysis on it through different settings are needed thus more comprehensive findings can be discovered. .

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